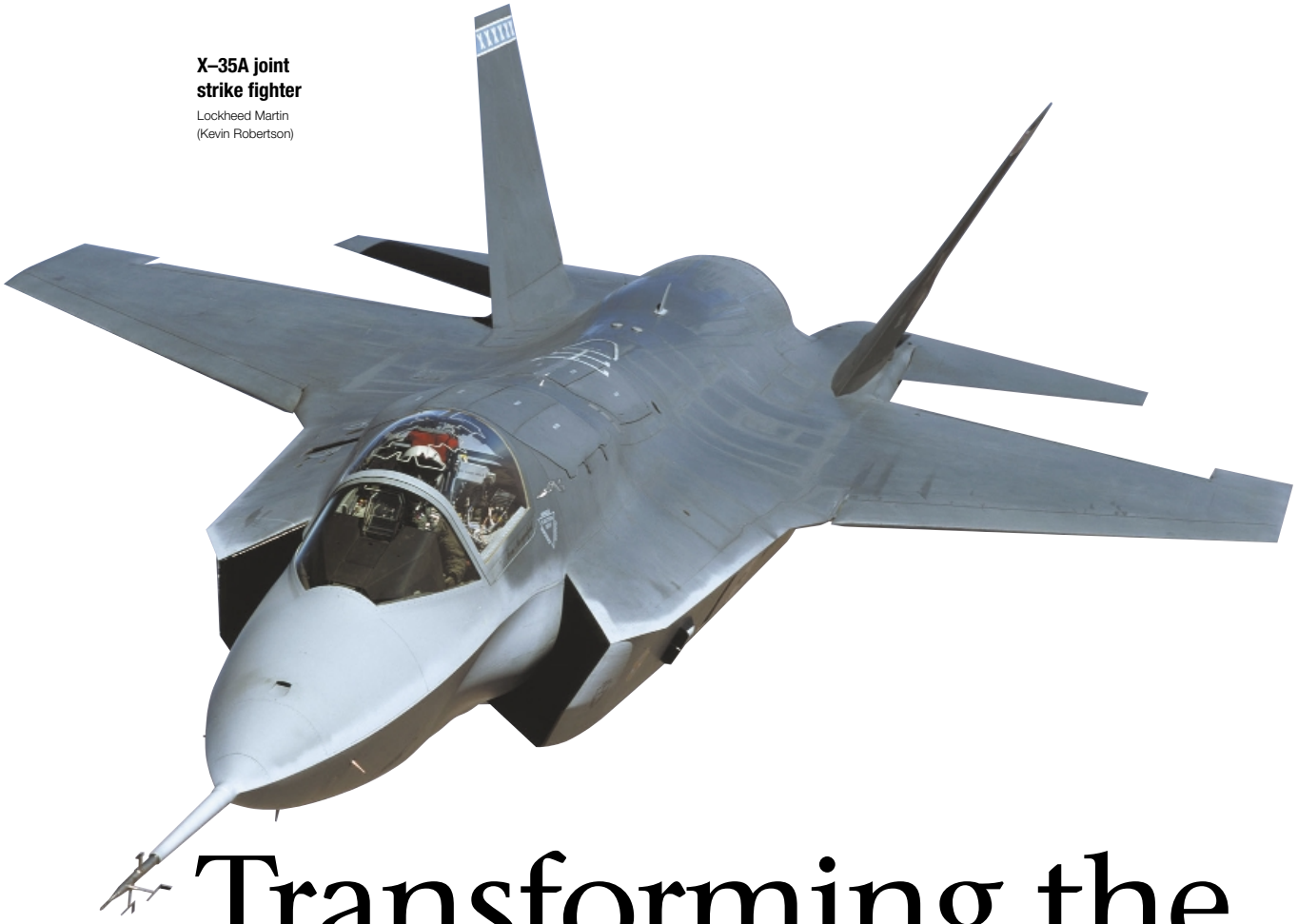

X–35A joint strike fighter
Lockheed Martin
(Kevin Robertson)

Transforming the **Air Force**

By JAMES G. ROCHE

As America continues to prosecute its first war of the 21st century, it is useful to recall that the Air Force was born in wartime and bred for joint operations. Today, along with the other services, it is engaged in a determined effort to adapt to a new era. The current campaign against global terrorism is providing critical lessons about the application of airpower and spacepower. It is important to get those lessons right, be agile, and build on the strengths of the past without being tied to past glories.

The Honorable James G. Roche is the 20th Secretary of the Air Force; a retired naval surface warfare officer, he previously served as President, Electronic Sensors and Systems Sector, Northrop Grumman Corporation.

Every day the Air Force continues to fly, launch, orbit, track, communicate, secure, refuel, transport, and support national interests around and above the globe. And while it is busy meeting the current needs of unified commands, it is applying new operational concepts and information technologies to maintain dominance in air and space. From precise, long-range strikes and humanitarian missions in Afghanistan, to persistent surveillance over Iraq and the Balkans, to contributing to homeland security, the service is working to identify the demands that will transform future roles, missions, and strategic priorities.

Although the service is committed to a transformational path, challenges remain. Considering the number of aircraft and airmen devoted to

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Predator UAV.

1st Combat Camera Squadron (Scott Reed)

homeland security, along with the forces deployed to Southwest Asia in support of Enduring Freedom, the Air Force is supporting the equivalent of operations in two simultaneous major theaters of war. At the same time, maintenance of aging systems and quality of life and work initiatives for personnel compete with modernization requirements. Their cost is compounded by unprecedented requirements for air and space forces at a time when legacy systems are nearing the end of their life cycles. Still, the future demands that the service meet the President's mandate to renew and rebuild warfighting concepts, organizational constructs, and force structure.

the Air Force is accelerating its commitment to expanding global reconnaissance and strike capabilities

Enduring Freedom

The Air Force has always evolved along with a changing environment and advancing technology. American forces with Afghan and coalition partners have recently routed a well-dug-in enemy on one of the world's least accessible battlefields. Enduring Freedom combined the best forces, regardless of service, in previously untried ways. Navy and Air Force pilots, with Army and Air Force Special Operations Forces personnel, invented new tactics that improved munitions accuracy and increased the flow of targeting data to strike aircraft. They demonstrated how U.S. forces are working more closely together than ever before, from refueling, to combat search and rescue, to joint targeting.

Enduring Freedom is only the most recent example of Air Force commitment to joint operations. The key to that contribution was the continuous integration of air and space capabilities enhanced by rapid advances in information technology. Whether dropping rations to starving civilians or precision-guided bombs on Taliban tunnels, the service worked with land and naval forces to achieve planned effects. As Secretary of Defense Donald Rumsfeld declared, "It's a cooperative effort."

Beyond current operational demands, the Air Force is accelerating its commitment to expanding global reconnaissance and strike capabilities. Thus it is placing special emphasis on providing intelligence, surveillance, and reconnaissance (ISR) to joint operations. Additionally, it is pursuing the horizontal integration of manned, unmanned, and space platforms to reduce time in the find, fix, track, target, engage, and assess decision cycle.

During Enduring Freedom, a variety of strike platforms aided by air and space reconnaissance assets, in concert with Special Operations Forces

1st Combat Camera Squadron (Cecilio M Ricardo, Jr.)

MH–53 emerging from C–17, Enduring Freedom.

and intelligence support, repeatedly struck at the heart of the Taliban and al Qaeda network. Among the greatest U.S. asymmetric advantages proved to be the ability to strike quickly from great distances with precision weapons, rapidly stand up a global air bridge, and persistently reconnoiter emerging targets.

While just a decade ago only 3.5 percent of the bombs dropped during Desert Storm were precision-guided, that figure is 60 percent for the Afghan air campaign. This increase in lethality and efficiency is the cumulative result of many initiatives that have also advanced joint interoperability. Comparatively few Navy and Air Force strike aircraft could employ precision munitions ten years ago; now nearly all can. During Desert Storm, the daily schedule of bombing strikes—the air tasking order—had to be physically flown out to aircraft carriers. Today the order can be sent anywhere in the world, including naval ships, in a matter of minutes via satellite—accompanied with additional gigabytes of precision targeting imagery. Advanced laser targeting pods on F–16s and F–18s are enabling pilots to automatically strike any target located by ground forces or other airborne assets such as the Predator unmanned aerial vehicle (UAV).

One of the most important and challenging transformational efforts is the horizontal integration of command, control, communications, computers, intelligence, surveillance, and reconnaissance (C^4ISR) assets. This synthesis includes the conversion of raw information from different platforms into targeting data for operators and information for commanders. For example, various platforms in Afghanistan, such as the Global Hawk and Predator UAVs, RC–135 and U–2 reconnaissance aircraft, E–8Cs, Navy E–2s and P–3s, and space assets, were linked to resolve ambiguities over target location and identification. This permitted long-range strike platforms to receive updated data en route to the target area.

The array of weapons available to the force has also been expanded. Joint direct attack munitions (JDAMs) are so-called dumb bombs retrofitted with an electronic brain and fins for steering and are guided by signals from global positioning system satellites. These have enabled large-scale precision bombing. Available in limited numbers

192d Fighter Wing (Michele Misiano)

Guardsmen preparing for Noble Eagle.

just two years ago for Kosovo, to date they have constituted three quarters of the precision munitions dropped in Afghanistan. Unlike World War II tactics, with hundreds of bombers dropping thousands of bombs on a single strategic target, JDAMs allow the Air Force to use a single aircraft with only a few munitions to strike several targets with devastating results. And unlike air operations over Kosovo, friendly forces on the ground in Afghanistan have enabled us to employ these weapons to best effect by identifying targets and directing precision attacks.

A Bigger Tool Box

While improvements in C⁴ISR and attack systems demonstrated their worth during Enduring Freedom, they remain only the foundation for dealing with future enemies. The security environment will continue to evolve and will be influenced by asymmetrical threats from both state and nonstate actors. However, basing a strategy on threats alone would cause planners to miss the mark in posturing for tomorrow. Air Force planners are focusing on coupling accelerated technological advancements with new conceptions of the future battlespace. The goal is to look past uncertain, dynamic needs. Threat-based strategies were suitable for the bipolar Cold War era but no longer offer the best framework for understanding the world. Instead, the Air Force must develop a capabilities-based force, identifying and refining future global reconnaissance and strike requirements even while continuing to evaluate how to best deal with immediate needs. Through this process, the service will define the terms on which future battles will be fought and then organize, train, and equip forces accordingly—retaining strategic flexibility and averting strategic surprise.

an essential component of future operational concepts will be air and space superiority

By reorganizing as an expeditionary air and space force and through operational concepts like the Global Strike Task Force, the Air Force has used current systems to provide new capabilities for CINCs. The Global Strike Task Force, for example, leverages technology to create asymmetrical advantages on the macro level—providing a force that can ensure access for U.S. forces to remote theaters. As future operational concepts are identified and developed, the Air Force will move ever closer to maximizing its fundamental competencies—global reconnaissance and strike.

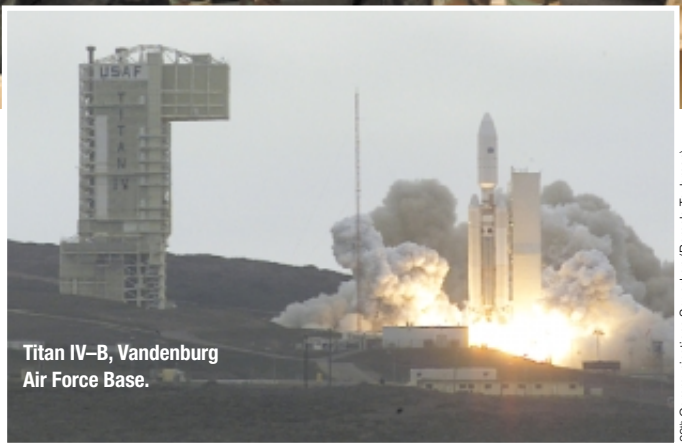
An essential component of future operational concepts will be air and space superiority, exploiting such capabilities as those provided by the F–22, an air-dominance fighter with substantial air-to-ground strike capabilities. Its stealth and supercruise will allow airmen to penetrate enemy battlespace regardless of attempts to deny access, enabling follow-on joint forces to operate with relative freedom. These leap-ahead capabilities will allow F–22s to defeat the most sophisticated surface-to-air missile systems under development. It will be able to loiter over the battlefield, responding quickly to mobile targets; and it will be better able to work with ground forces. The fighter also expands our overall precision strike capability by further enhancing legacy stealth systems, B–2s and F–117s, enabling them to conduct daylight strikes for the first time.

Just as precision munitions provide the joint warfighter a significant increase in lethality over Afghanistan, the small diameter bomb (SDB) under development will add new flexibility. This 250-pound weapon is projected to have a stand-off of 60 to 70 miles when employed at high altitude. This stand-off will dramatically increase aircraft survivability. Envisioned for use on both manned and unmanned systems, it will also provide joint warfighters a low-yield, precise weapon, thus lowering collateral damage. Perhaps its greatest benefit is that more of them can be carried on a given sortie, enabling fewer aircraft to hit more targets.

The Air Force also has a comprehensive plan to modernize current aircraft, which includes replacing legacy F–15s, F–16s, and A–10s with F–22s and joint strike fighters. C–17 procurement is bringing revolutionary strategic airlift capabilities to warfighters and the Air Force is pursuing a two-phased modernization approach for the C–5. Furthermore, the fleet of

786th Communications Squadron (Heather Zokal)

Shifting humanitarian aid, Ramstein air base.



30th Communications Squadron (Pamela Taubman)

Titan IV–B, Vandenburg Air Force Base.

707 tankers and C⁴ISR platforms must be replaced with a new class of aircraft to meet future commitments. Additionally, the Air Force is examining the potential of transforming single mission platforms into multimission assets. For example, the plan to replace the aging 707-based fleet includes the innovative idea of placing passive sensors or data links on future smart tankers.

space systems are integrated into virtually every aspect of military operations

The Great Beyond

As the DOD-designated executive agent for space, the Air Force is working with the other services and appropriate agencies to establish a comprehensive approach to national security space management and organization. This effort involves a cradle to grave process to design, develop, acquire, and operate space systems. The Air Force is also leading the development of a national security space plan that for the first time will provide a comprehensive document that links both Department of Defense and intelligence community space-related requirements to budgeting, allowing for the detailed projection of future capabilities.

The Air Force is committed to improving the air and space capabilities it provides to joint warfighters. It is pursuing the investments needed to sharpen the teeth of long-range strike, surveillance, mobility, UAV, and space assets. The service is making critical investments to improve the capability of current weapon systems and at the same time bringing new capabilities to the fight. In direct support of the CINCs, it continues to modernize space forces to further enhance joint operations and the ability to monitor global activities. Several payloads have been launched into space in the past year, enhancing precision location and navigation, reliable and secure communications, and global surveillance and warning. Space systems are now integrated into virtually every aspect of military operations.

Modernization of the missile warning system is underway with the space based infrared radar system (SBIRS) comprising two programs referred to as SBIRS-high and SBIRS-low. The first

U.S. Air Force (Dustin A. Tyson)

Secretary Roche in Southwest Asia.

constellation, responsible for alerting officials of missile launches around the world, will consist of payloads in geosynchronous and highly elliptical orbits. The second, a constellation of near-Earth satellites, will track missiles in mid-course following booster separation. Both programs will share a common ground-based control and exploitation network. The first increment for SBIRS-high, the consolidation of existing defense support program sites into a single new state-of-the-art mission control station, has already occurred. The systems design review for the SBIRS-low component has also been completed. Although there are development issues that still require attention, this system remains essential to the defense of the Nation.

Preparation for the first launch of the new expendable launch vehicle in 2002 is on track. It will ensure reliable and cost-effective access to space well into the new century. It is anticipated that the vehicle will save up to 50 percent over legacy launch systems.

There is also progress in the space control area with the multi-year space surveillance network recapitalization effort. In another space control-related action, the Air Force has begun integrating potential enemy space capabilities into wargaming exercises, ensuring preparedness to react to attacks on space-related infrastructure.

In addition to developing the national security space plan, the Air Force is also leading the effort to conduct the first national security space program assessment, which will compare the plan to the current program objective memorandum and identify space-related recapitalization challenges over the five-year defense program for both the Department of Defense and the intelligence community.

The Air Force and National Reconnaissance Office, working together, have identified numerous best practices associated with the integration of space acquisition and operations processes. These procedures will increase the efficiency and effectiveness of space-related activities and facilitate the further integration of classified and unclassified space systems.

Sound Fundamentals

The Air Force is embracing efficiency and innovation across the full spectrum of operations. In particular, it is determined to adapt acquisition policies and processes to ensure innovation and competitiveness. The service has begun a concerted effort to provide incentives for defense contractors, large and small, to become more efficient and innovative. Savings achieved through excellence can be reinvested in warfighting capabilities.

The most critical long-term challenge for the Armed Forces remains retaining skilled people. The Air Force is known for attracting and keeping the best individuals, both civilian and military, and caring for them and their families. A high-technology Air Force cannot operate without such people. For example, as it pioneers the increased integration of UAVs into operations, it must reexamine its force structure and ensure proper organization to not only effectively employ UAVs, but also provide career-rewarding experiences to those supporting such operations.

The events of the last few months have placed great demands on the total force—active, Air Force Reserve, Air National Guard, and civilian. The new homeland security mission and the requirements of fighting a new kind of war require prudent measures to preserve combat capability. They call for highly trained, educated, and motivated personnel. Together with the other services, the Air Force is steadfast in developing a seamless military in which resources, effort, and strategic planning coalesce into truly unified capabilities.

While the Air Force will continue to exploit air and space to national advantage, new demands will alter how its people accomplish these missions. The service faces the dual challenges of engaging in war while fundamentally reshaping its warfighting capabilities. Yet this is not an insurmountable task. Protecting the United States from further attack while taking the fight to the enemy necessitates resolve and patience. Transforming the military requires creativity, ingenuity, and vision. America's airmen are equipped for both challenges. They remain guided by the words of one of their founders over half a century ago, General Henry ("Hap") Arnold: "It's got to be done and done quickly, so let's get it done." **JFQ**